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TO : The Files

DATE: 5 March 1954

FROM

SUBJECT: Trip Report - Contract [] Task I

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1. A visit was made to the facilities of the [] on 16 February 1954, to investigate the progress being made on the development of the [] Automatic Equipment.

2. Those present for a discussion of the subject equipment were:

3. An engineering model of the equipment had been completed and an operational test consisting of magnetic tape erasure, teletyping new information on the tape and transmitting this information to a teletype printer. A copy of this test is attached herewith. The error noted in the second line is a typing error. A second error in the second paragraph occurred when a bias adjustment was being made.

4. The present magnetic storage system consists of a continuous tape loop with a capacity of 150 words - the specifications call for a minimum of 100 words. The capacity of the storage system is not critical and it could just as well accommodate 200 words. Such a storage system was developed in the study phase of the contract and was abandoned because of tape splitting problems. The splitting has been eliminated and the original system is now being employed again because of its low friction.

5. Along with tape feed problems encountered with the magnetic storage system, the contractor replaced a 6 volt motor with a 30 volt motor (same current drain). The contractor thought he could revert back to the 6 volt motor with the solution of the tape feed problems. This matter was considered for possible redesign for battery operation.

6. The step mechanism for tape indexing is excessively noisy and the contractor was asked to consider means for reducing this effect. Improvement can also be made to the sluggish, or delayed, action of the solenoid encountered when a depressed key is released. The present step mechanism involves two contact fingers on each key that are series

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connected through a contact ring when the key is released and further series connected through all 31 keys. The completed circuit discharges a condenser and actuates the solenoid. If any set of contacts is dirty, the stepping solenoid is not actuated until the faulty key is jiggled. The contractors plan is to provide an additional contact ring on each key to provide a wiping contact when a key is released. This contact would open when the key is in the "full-up" position thus permitting parallel wiring of the stepping contacts. It is felt that such rewiring will provide a solution to this problem. There was no evidence of poor contact with the baud fingers which make a wiping contact.

7. An observation of the waveform of the integrated pulses after three stages of amplification and prior to being gated were not uniform in response. Although the base line to peak signal appeared to be 35 volts for 75% of the pulses, the amplitude of the balance of the pulses varied between something less than 35 volts and 20 volts. The contractor attributed this fact to non-uniform construction and placement of the six baud yokes in the engineering model. Field utilization of the equipment requires that a gate bias adjustment be accomplished to prevent the overshoot of the integrated pulses from firing the gate. Inasmuch as the overshoot as observed appeared excessive, future redesign of the baud yokes of the equipment might be directed towards minimizing the overshoot and providing automatic gate bias.

8. It appeared evident that the contractor had made considerable progress in the development of the engineering model since the last period. The contractor felt that an improved engineering model could be built or that the planned improvements could be incorporated in prototype models of the equipment. (The next phase for the contract). Inasmuch as the operational compatibility of the equipment ~~has been~~ ^{may be} extended to include battery operation as a desirable feature a redetermination of contractual needs should be made. It was decided that the contractor "clean up" the present engineering model and submit it to the Agency for evaluation within 30 days and that after an evaluation has been made the contractor will be advised as to the desirability of producing a second engineering model, prototypes with improvements, or redesign for battery operation.

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Attachment 1 copy Tape Print

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